Arizona State Retirement System Board

Investment Manager Evaluation Framework

Public Securities: Equity and Fixed Income

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Recommendations

- Adopt the ASRS Investment Manager Evaluation Framework Principles and Core Beliefs (Exhibit A)
- Adopt an ASRS Investment Manager Evaluation Framework Schematic that is based on the 5Ps, incorporates portfolio management principles, and recognizes the importance of informed judgment (Exhibits B1, B2)
- Adopt a risk-based approach to performance measurement that uses indexes as the primary benchmarks for measuring performance. Use Peer Group comparisons as supplemental information (Exhibits C1, C2, C3)

Exhibit A

Evaluation Framework

Principles and Core Beliefs

	Theme	Description
Portfolio Management	Portfolio Management Approach	The framework will address the analytical process for evaluating managers, hire/retain/terminate disciplines, and portfolio construction.
	Portfolio Theory	Portfolio theory supports focusing on the relationship among the investments in the portfolio. In the case of a pension fund, the individual investment managers represents the investments. The two major requirements of an investment manager: (1) provide excess return relative to their benchmark and (2) eliminate unsystematic risk (diversification).
	Risk Allocation	Focus on allocating risk (not capital) to investment managers based on expectations of active risk and information ratio.
Performance	Performance Attribution	Distinguishes between performance due to general market factors (e.g. volatility regime, broad v. narrow markets) and specific manager factors (e.g. change in the 5Ps).
	Persistence of Performance	Investment styles move in- and out-of-favor during difference market environments.
	Performance Measurement Consistency	Consistent performance measurement across the entire life cycle of an investment manager, from hiring, through retention, to possible termination.
General	Transparency	Transparency into rationale for IMD recommendations to hire, retain, change allocation, or terminate a manager.
	Comprehensive Flexible Decision-Making Framework	Elements of the framework include: rigorous analysis based on investment theory, action-oriented, multiple analytical perspectives, consideration of quantitative and qualitative factors, and reflects the importance of informed judgment. Decisions are based on investment disciplines and guidelines, instead of rigid policies and rules.

Exhibit B1

Investment Manager Evaluation Framework
Public Securities: Stocks and Bonds
A Portfolio Management Approach

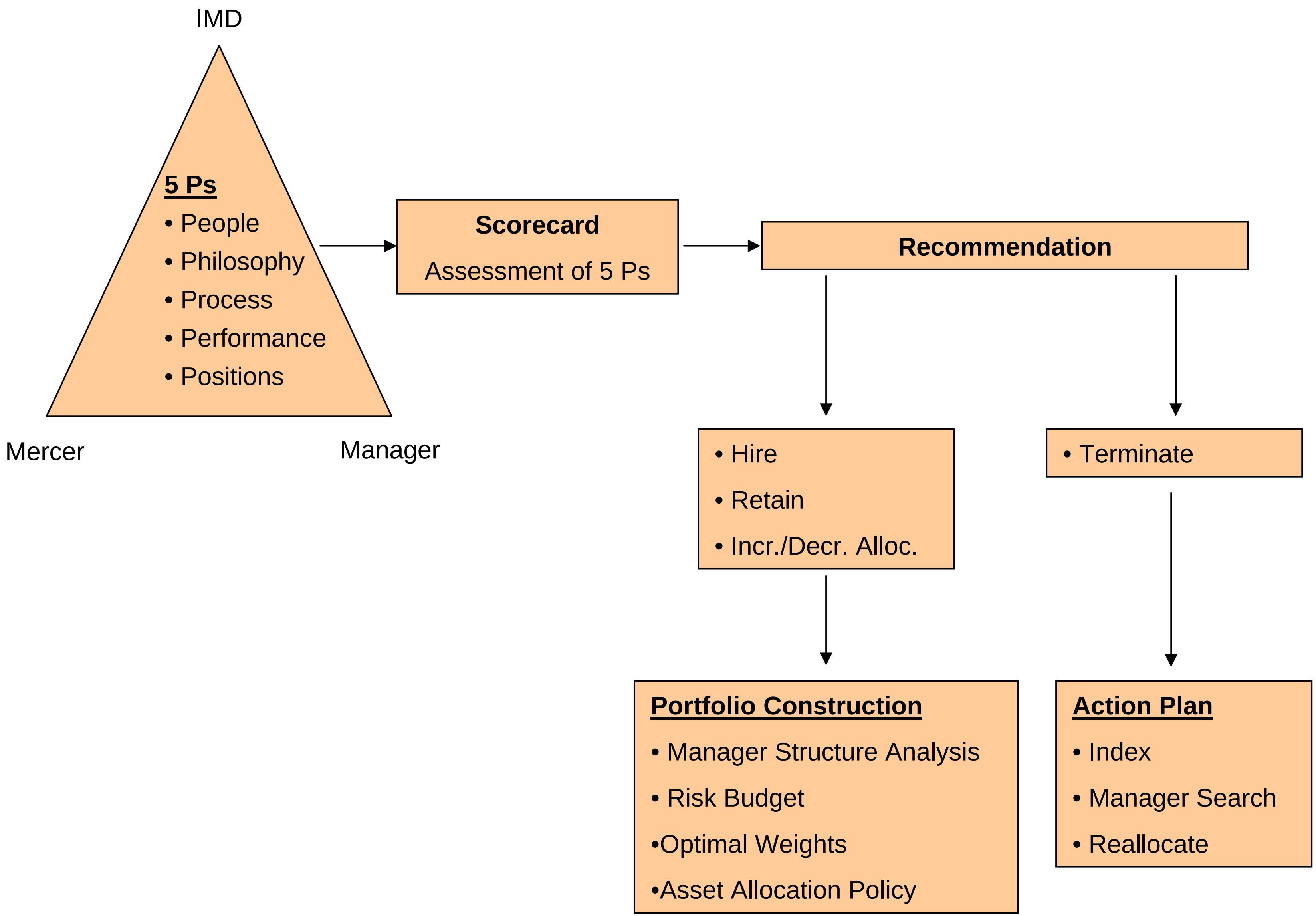

Exhibit B2

5 Ps Description

Qualitative

- People
  - Portfolio management team or individual
  - Management succession
  - Interaction of PM/analysts/traders
  - Stability
- Philosophy
  - Original thought and innovation
  - Based on market or academic research
  - Likelihood of creating a competitive advantage
  - Provides the foundation of entire investment process
- Process
  - Idea generation
  - Portfolio construction
  - Implementation
  - Business management

Quantitative

- Performance
  - Return, risk, correlation
  - Underperformance tolerance guidelines
    - Time frame: 3-5 years
    - Magnitude 300-500 basis points
- Positions
  - Style skyline
  - Sectors/industry groups (beta adjusted)
  - Barra analytics
    - Risk index exposures (size, value, growth, etc.)
    - Active risk decomposition

Exhibit C1

5 Ps: Performance
Principles in Selecting Benchmarks

- Required Characteristics of Benchmarks [1]
  - Unambiguous. The names and weights of securities comprising the benchmark are clearly delineated
  - Investable. The option is available to forgo active management and simply hold the benchmark
  - Measurable. It is possible to calculate the return on the benchmark on a reasonably frequent basis
  - Appropriate. The benchmark is consistent with the manager's investment style or biases
  - Reflective of Current investment opinions. The manager has current investment knowledge of the securities that make up the benchmark
  - Specified in advance. The benchmark is constructed prior to the start of an evaluation period
- Use of Peer Groups as benchmarks [2]
  - Not available in real time, resulting in time lag for comparison
  - There is no established oversight process for determining universe participants and whether the universe accurately represents the entire asset class or style of management
  - Survivorship bias will develop over time as some managers are deleted from the universe
  - They are not replicable or Investable
  - They do not permit the manager to move to a known neutral position
- Indexes possess all of the characteristics of appropriate benchmarks and are therefore effective portfolio management tools

[1] Investment Analysis and Portfolio Management, 6th Edition 2000, page 1164.

[2] AIMR, August 1998.

Exhibit C2

5 Ps: Performance
Alpha Measurement

1. Specify benchmark – Indexes
   - Style analysis
     - Returns-based (regression) - historical
     - Holdings-based (Barra risk factors) – current
   - Style drift measurement
2. Measure alpha
   - Use CAPM single-factor model: $Rp = Rf + \beta(Rm-Rf) + \alpha$
     - Based on appropriate style index and accounts for beta not equal to 1
3. Calculate risk-adjusted returns
   - Information Ratio = Alpha / Active Risk
     - Information Ratio is more consistent across time, while absolute alpha will fluctuate with changes in market volatility
   - Statistical test of significance (luck or skill)
4. Construct alpha-correlation matrix with other managers

Exhibit C3

5 Ps: Performance
Consistent

- Consistent approach to evaluating performance across the entire life cycle of an investment manager, from hiring, through retention, to possible termination.
- Relevant comparisons at different stages:
  - Hire
    - Universe based on Information Ratio given a Tracking Error range
  - Retain, Increase/Decrease Allocation, Terminate
    - **Primary**: Expectations at time of hire (Information Ratio, Tracking Error, Alpha)
    - **Secondary**: Universe based on Information Ratio given a Tracking Error range

Appendix

- Supporting Documentation
  - AIMR Benchmarks Subcommittee Report, August 1998
  - Mercer's Investment Manager Evaluation Framework, August 5, 2004 (confidential, not included)
  - Mercer/ASRS Study: Persistence of Manager Performance, June 2006
  - Investment Analysis and Portfolio Management, 6th Edition 2000